RTCA Special Committee 186, Working Group 3

ADS-B 1090 MOPS, Revision A

Meeting #11

May 24, 2000 Six-Minute Frankfurt Data Sample Processed with the RMF Baseline Enhanced Decoder with the New Re-triggering Algorithm and the 6-Microsecond Post Trigger Dead Time

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SUMMARY
In response to action item 10-13, this paper contains the 6-minute Frankfurt data sample processed with the new re-triggering algorithm and with a 6-microsecond post trigger dead time. The new re-triggering algorithm had virtually no effect on reception, and the 6-microsecond dead time resulted in about a 4 % reduction in reception probability overall.

Action item 10-13 was assigned to run a sample of Frankfurt data with the new re-triggering algorithm. Figure 1 shows a comparison of reception performance using the Baseline Enhanced Decoder both with and without the re-triggering algorithm modification. As indicated by the performance curve, there is virtually no change in reception performance.
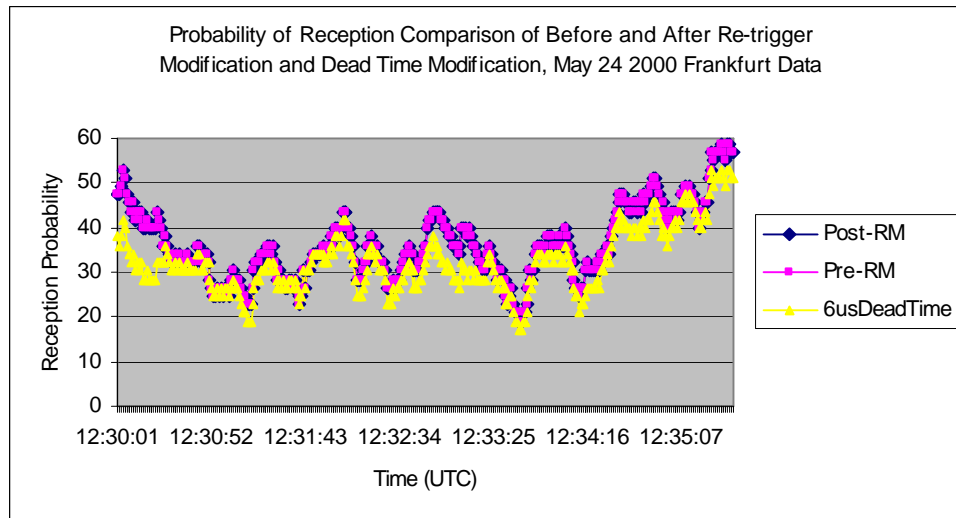

Figure 1 – Reception Comparison of Before and After Re-triggering Modification

The RMF Enhanced Decoder was modified to include a 6 microsecond dead time after each preamble trigger. Figure 1 also shows the reception performance with the dead time included. The overall average reception probability without the dead time was 36.12% and the overall average with the dead time was 32.39%.

The data used in this working paper is the same data sample used to examine the Benchmark Enhanced Decoder reception performance in section 4.7 of the Frankfurt Report. It is a 6-minute data sample recorded on 24 May 2000 aboard N40 and is the reception rate of the FII aircraft. The observed reception performance of this aircraft during this time period was generally poorer than average. The extended squitter counts were averaged over a 24-second wide time window to produce the aggregate average reception probability. Figure 2 shows the Probability of reception versus range with the new re-triggering algorithm both with and without the 6 microsecond dead time. Figure 3 shows the received power as a function of range.
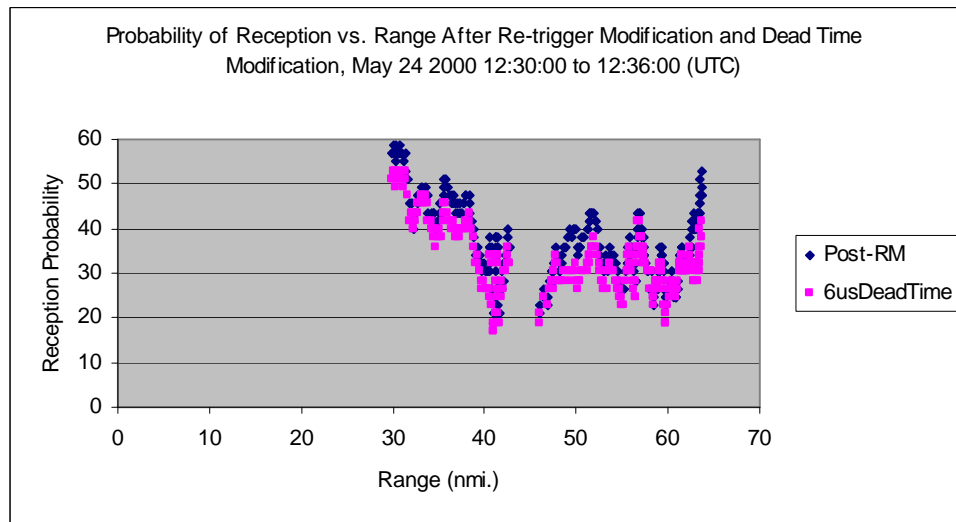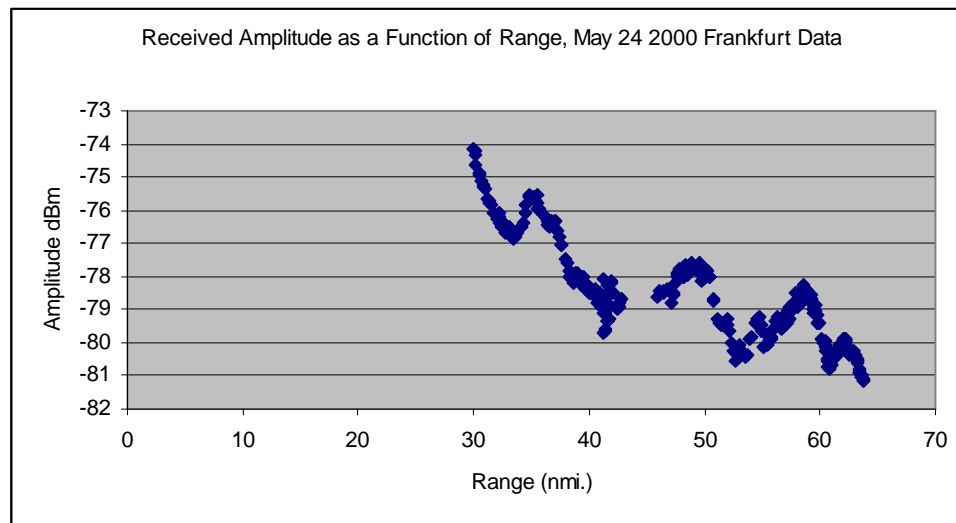
Figure 2 – Probability of Reception vs. Range

Figure 3 – Received Power as a Function of Range